

Application No.: 10/069,726

Reply to the Office Action dated: September 29, 2004

INTERVIEW SUMMARY

Applicants wish to thank Examiner Peng for the helpful and courteous discussion with Applicants' Representative on December 17, 2004. During this discussion proposed amended claims were discussed.

REMARKS

Applicants wish to thank Examiner Peng for allowing Claim 1 and 2.

Applicants respectfully request reconsideration of the application, as amended, in view of the following remarks.

The present invention as set forth in **amended Claim 3** relates to a polyarylene sulfide resin composition, comprising:

(a) from 30 to 75 % by mass of a polyarylene sulfide resin having a melt viscosity, as measured at 310°C at a shear rate of 1200/sec, of between 50 and 10,000 poise,

(b) from 25 to 70 % by mass of a filler, and

(d) from 0.1 to 1.0 part by weight, relative to 100 parts by mass of the sum of (a) and (b), of a silicone oil having a viscosity at 25°C of from 30 to 6,000 mm²/sec,

wherein the silicone oil is at least one member selected from the group consisting of silanol-modified dimethylpolysiloxanes, alkoxy-modified dimethylpolysiloxanes and mixtures thereof.

In amended Claim 4 the silicone oil has a viscosity at 25°C of from 50 to 5,000 mm²/sec.

Izutsu et al fail to disclose or suggest a polyarylene sulfide resin composition as claimed having the claimed combination of components. Particularly, the melt viscosity of the polyarylene sulfide resin of between 50 and 10,000 poise is not disclosed or suggested. In addition, the combination of modification and viscosity of the silicone oil is disclosed or suggested.

Applicants submit herewith a translation of Izutsu et al.

Izutsu et al discloses a polyphenylene sulfide resin composition comprising

100 parts by weight of a polyphenylene sulfide,

25 to 400 parts by weight of an inorganic filler, and

0.2 to 25 parts by weight of an organosilane and modified or unmodified silicone oil.

See Claim 1 of the translation of Izutsu et al.

There is no disclosure of the claimed the melt viscosity of the polyarylene sulfide resin of between 50 and 10,000 poise. Thus, the present invention cannot be anticipated.

A number of groups for modifying the silicone oil are disclosed at pages 6 and 7 of the translation of Izutsu et al. The translation states at page 7, lines 6-8: “ The unmodified and/or modified silicone oil has a viscosity not particularly limited within the range of 10 to 5,000,000 ctsk” (corresponds to 10 to 5,000,000 mm²/sec) “but is preferably of high viscosity”. Izutsu et al think that any viscosity can be used and if at all there is a preferred range, it is the high viscosity range. However, the claimed 30 to 6,000 mm²/sec or 50 to 5,000 mm²/sec are **low** viscosities.

Izutsu et al fail to recognize that superior results can be obtained in the low viscosity range as shown in Table 3, at page 30 of the specification. A comparison of a composition containing silanol-modified dimethyl silicone oil having a viscosity of **100 mm²/sec** (**Example 8**) and a composition containing silanol-modified dimethyl silicone oil having a viscosity of **8,000 mm²/sec** (**Comparative Example 10**) is made. Notably, Example 8 according to the present invention has **higher flexural strength** (256 compared to 240), **higher Izod impact strength** (7.8 compared to 6.5) and **excellent mold releasability**. However, based on Izutsu et al one of ordinary skill in the art would have selected a silicone oil having a high viscosity and not a viscosity of 30 to 6,000 mm²/sec.

The combination of modification and viscosity is not exemplified or otherwise suggested. Example 1 uses polydimethyl siloxane having a viscosity of 50 ctsk (50 mm²/sec) as a silicone oil. However, this is **an unmodified polydimethyl siloxane** and not a modified silicone oil as claimed.

Examples 10 and 12 in Table 2 of Izutsu et al (pages 13 and 14 of the translation) disclose a composition using silanol-modified dimethylsiloxane having a viscosity of 50,000 ctsk (50,000 mm²/sec). However, this is much higher than the claimed viscosity of between 30 to 6,000 or 50 to 5,000 mm²/sec as claimed in Claims 3 and 4, respectively.

Further, the subject matter of **new Claims 9-12, 15-20, 23 and 24** is not disclosed or suggested by Izutsu et al. Thus, Claims 9-12, 15-20, 23 and 24 should not be rejected over Izutsu et al.

Therefore, the rejection of Claims 3-8 under 35 U.S.C. § 102(b) as anticipated by Izutsu et al (JP 62-197451) is believed to be unsustainable as the present invention is neither anticipated nor obvious and withdrawal of this rejection is respectfully requested.

The rejection of Claims 3-8 under 35 U.S.C. § 102(b) as anticipated by Ishio et al (JP 09-291213) is respectfully traversed.

Ishio et al fail to disclose or suggest a polyarylene sulfide resin composition as claimed having the claimed combination of components. Particularly, the melt viscosity of the polyarylene sulfide resin of between 50 and 10,000 poise is not disclosed or suggested.

Ishio et al disclose a polyphenylene sulfide resin composition comprising

(A) 99.9 to 99.5 % by weight of polyphenylene sulfide resin which has 45,000 to 90,000 of peak molecular weight in molecular weight distribution determined by gel permeation chromatography and has been treated by oxidation crosslinking, and

(B) 0.1 to 5 % by weight of silicone oil, both of which are melt and kneaded. This composition does not substantially contain fibrous and non-fibrous fillers. See Claim 1.

Ishio et al disclose that a silicone oil organic radicals such as a methyl group, an ethyl group, a phenyl group, a vinyl group, a trifluoropropyl group or mixtures thereof bonded to the silicone. Part of the organic radicals is substituted by an epoxy group, an amino group, a hydroxyl group, a polyalkyleneoxide group, a carboxyl group, a thiol group. See [0026].

The viscosity of the silicone oil is from 10 to 10,000 mm²/sec, preferably from 10 to 5,000 mm²/s, at 25°C. See [0027].

However, there is no disclosure or suggestion that the melt viscosity of the polyarylene sulfide resin is between 50 and 10,000 poise. Thus, the present invention cannot be anticipated by Ishio et al.

In Examples Ishio et al use a **dimethylsilicone oil** having the viscosity at 25°C of 1000mm²/s (Ishio et al, B-1, Comparative Example 2, 5, and Examples 2, 3, 5 to 9 in the Table 1) and 20,000mm²/s (Ishio et al, B-3, Example 4) and a **methylphenylsilicone oil** having the viscosity at 25 °C of 500 mm²/s (Ishio et al, B-2, Example 1).

However, there is no disclosure or suggestion of a silicone oil having a viscosity at 25°C of from 30 to 6,000 mm²/sec or 50 to 5,000 mm²/sec, wherein the silicone oil is at least one member selected from the group consisting of silanol-modified dimethylpolysiloxanes, alkoxy-modified dimethylpolysiloxanes and mixtures thereof.

Therefore, the rejection of Claims 3-8 under 35 U.S.C. § 102(b) as anticipated by Ishio et al (JP 09-291213) is believed to be unsustainable as the present invention is neither anticipated nor obvious and withdrawal of this rejection is respectfully requested.

The rejection of Claims 3-6 under 35 U.S.C. § 103(a) as being unpatentable over Brady et al (US 3,929,708) as evidenced by Freeman (Silicones, published for the Plastics Institute, (1962)) is respectfully traversed.

Brady et al and Freeman fail to disclose or suggest a polyarylene sulfide resin composition, comprising a polyarylene sulfide resin having a **melt viscosity**, as measured at 310°C at a shear rate of 1200/sec, of between 50 and 10,000 poise, from **25 to 70 % by mass of a filler**, and a **silicone oil having a viscosity** at 25°C of from **30 to 6,000 mm²/sec (or 50 to 5,000 as in Claim 4)**, wherein the silicone oil is at least one member selected from the

group consisting of silanol-modified dimethylpolysiloxanes, alkoxy-modified dimethylpolysiloxanes and mixtures thereof.

Brady et al disclose a composition comprising at least one (poly(arylene) sulfide) resin having a melt point in the approximate range of 400° to 800° F, and a melt flow in the approximate range of 0.1 to 3,000, and a silicone fluid which is a polysiloxane having a molecular weight in the approximate range of 500 to 3,000 and having the repeating units -Si(R)₂-O-, wherein each R is a monovalent hydrocarbon radical having up to 6 carbon atoms individually selected from the group consisting of alkyl, cycloalkyl, and aryl (Brady et al, Claim 1).

Brady et al also discloses that examples of suitable polysiloxanes include dimethylpolysiloxane, diethylpolysiloxane, dibutylpolysiloxane, dibutylpolysiloxane, dicyclohexylpolysiloxane, diphenylpolysiloxane, methylethylpolysiloxane, and phenylmethylpolysiloxane (Brady et al, col. 2, lines 21 to 26).

Freeman merely discloses chemical properties and physical properties of dimethyl silicone fluids.

However, both Brady et al and Freeman fail to disclose or suggest a polyarylene sulfide resin composition, comprising a polyarylene sulfide resin having a **melt viscosity**, as measured at 310°C at a shear rate of 1200/sec, of between 50 and 10,000 poise, from **25 to 70 % by mass of a filler**, and a **silicone oil having a viscosity** at 25°C of from **30 to 6,000 mm²/sec (or 50 to 5,000 as in Claim 4)**, wherein the silicone oil is at least one member selected from the group consisting of silanol-modified dimethylpolysiloxanes, alkoxy-modified dimethylpolysiloxanes and mixtures thereof.

Therefore, the rejection of Claims 3-6 under 35 U.S.C. § 103(a) as being unpatentable over Brady (US 3,929,708) as evidenced by Freeman (Silicones, published for the Plastics

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Institute, (1962)) is believed to be unsustainable as the present invention is neither anticipated nor obvious and withdrawal of this rejection is respectfully requested.

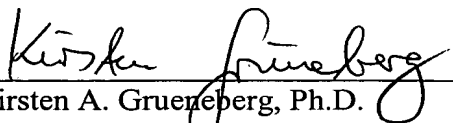
Applicants respectfully request that the Examiner acknowledge that the references cited in the **Information Disclosure Statement, filed herewith** have been considered.

The foreign priority documents should have been received by the Examiner from the International Bureau. If there is a delay with this procedure, the Examiner is kindly requested to inform Applicants.

This application presents allowable subject matter, and the Examiner is kindly requested to pass it to issue. Should the Examiner have any questions regarding the claims or otherwise wish to discuss this case, he is kindly invited to contact Applicants' below-signed representative, who would be happy to provide any assistance deemed necessary in speeding this application to allowance.

Respectfully submitted,

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